

SUCCESS STORY

Wood K plus WOOD: Transition to a sustainable bioeconomy

Programme: COMET – Competence Centers for Excellent Technologies

Programme line: COMET-Center (K1)

Type of project: EGG 2.1: Processes for new raw materials 2023 – 2026, multi-firm Project

WOOD

K PLUS

FROM INDUSTRIAL EFFLUENTS TO EMISSION REDUCED WOOD BOARDS

DEVELOPMENT OF AN INDUSTRIALLY SUITABLE APPROACH FOR EMISSION REDUCTION FROM PINE WOOD BY PRETREATMENT WITH WASTE WATER

Emissions of volatile organic compounds (VOC) from wood-based materials are a serious problem for the wood industry: However, the specifications and regulations regarding emissions from wood-based materials such as OSB (oriented strand boards) are becoming increasingly strict and achieving emission limits is becoming more and more challenging for companies. Pine wood as a raw material for OSB also has a higher emission potential than spruce due to its high extractives content.

Previous approaches to VOC reduction such as thermal, chemical, or enzymatic pre-treatment are either harmful to the environment or costly or time-consuming and therefore not suitable for

implementation in a large-scale production process. Together with the company Fritz EGGER GmbH & Co. OG, Wood K plus has for the first time developed an approach suitable for industrial use by which VOC emissions from pine wood strands can be sustainably reduced by pretreatment with activated sludge from the biological wastewater treatment. The microorganisms (= biofilms) present in the activated sludge have the potential to break down the VOC precursors in the wood, thereby reducing the release of emissions in the production process and in the finished product. In the project, the pre-treatment method was increased to industrial suitability by gradually optimising the treatment time and upscaling the amount of wood: Starting with

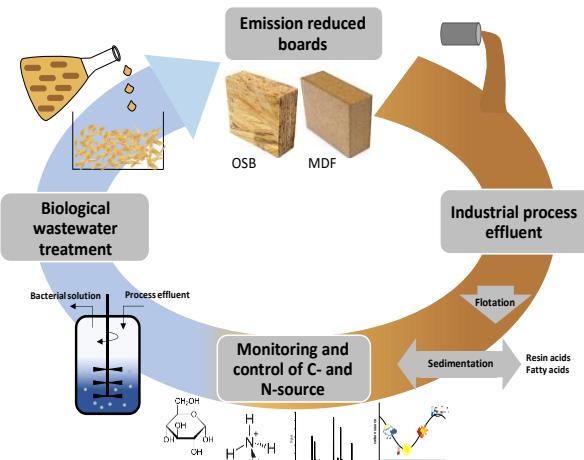
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laboratory-scale tests with just a few grams of wood and moving on to pilot plant tests in the kg-range, the industrial application of biotechnological VOC reduction using activated sludge in EGGER's OSB production line with the treatment of >40 tons of wood material was finally successfully demonstrated.

The overall aim of the project was to develop an environmentally friendly, industrially applicable process for the production of low-emission OSB by treating wastewater from the wood industry using biofilms as degradation tools. Thanks to the long-term cooperation between the project partners, this was successfully implemented on an industrial scale for the first time in 2023. Intensive work is now underway to make the developed method applicable to routine large-scale production in order to be able to offer low-emission panel materials to end customers now and in the future.

The results and findings on biotechnological VOC reduction obtained in the project are an important and valuable basis for EGGER to routinely integrate an innovative technology into industrial production in

the future; In addition, the associated reutilisation of activated sludge from the biological wastewater treatment plant, which is located at the same site as the OSB production facility, is an extremely important step in the company's self-sufficiency strategy.



Circular application of biotechnological VOC reduction (©Wood K plus)

Project coordination (Story)

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